DUAL IMAGE FUSION TECHNIQUE FOR UNDERWATER IMAGE CONTRAST ENHANCEMENT

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Abstract:
Underwater imaging is receiving attentions throughout these years. Attenuation of light causes the image taken to have low in contrast and colour. Furthermore, the image taken in underwater usually to be appeared with foggy and hazy. Therefore, these may affect on the study of marine life to the researchers. In this project, a new approach on enhancing underwater images that implementing dehazing, and homomorphic filtering and image fusion is applied on the underwater images. The proposed method is to reduce the nonuniform illumination in real underwater image. The dehazing method is consists of multi-scale fusion technique by applying weight maps in the pre-processing step. Homomorphic filtering and image fusion are then subjected to the resultant image for further contrast and color enhancement. Qualitative and quantitative evaluations are made to support the performance of the proposed method. Both evaluations indicate that the proposed method lead other enhancement techniques in terms of contrast, image details, colors and entropy. Moreover, implementation of Raspberry Pi with Picamera as standalone underwater image processing device is successfully carried out. The performance of Raspberry Pi in underwater image processing is in expected result. The quality of the underwater image is improved in terms of color, contrast, and image detail

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